

Next Generation Multi-mode Remote Sensing Radar

Completed Technology Project (2013 - 2014)



Project Introduction

The objective of this work is to demonstrate a new generation of digital beamforming synthetic aperture instrument technology (DBSAR-2) which has the potential of providing high quality data in support of several disciplines in Earth and planetary sciences and enable future spaceborne and airborne NASA missions.

This effort leverages ESTO and SBIR investments aimed at enabling fully polarimetric digital beamforming multimode radar, high resolution (wideband) measurements, and advanced digital radar waveform synthesis and processing. The effort will build upon the technology path set out by the Digital Beamforming Synthetic Aperture Radar (DBSAR) and leverage three new developments to implement the most advanced polarimetric Digital Beamforming L-Band radar architecture for airborne applications.

Anticipated Benefits

The new generation radar technology will be very valuable for future Earth and planetary science missions. For example, for Earth science, the full polarimetric backscatter measurements provide the unique capability of mapping the forest cover, disturbance from deforestation and degradation, forest recovery, wetland inundation, and above ground biomass. For Planetary, multiple mode operation, polarization capabilities, and onboard processing are significant enhancements over other radars flown to planetary targets. Fully polarimetric radar data are also critical in the development and validation of retrieval algorithms for future airborne and spaceborne applications.



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Table of Contents

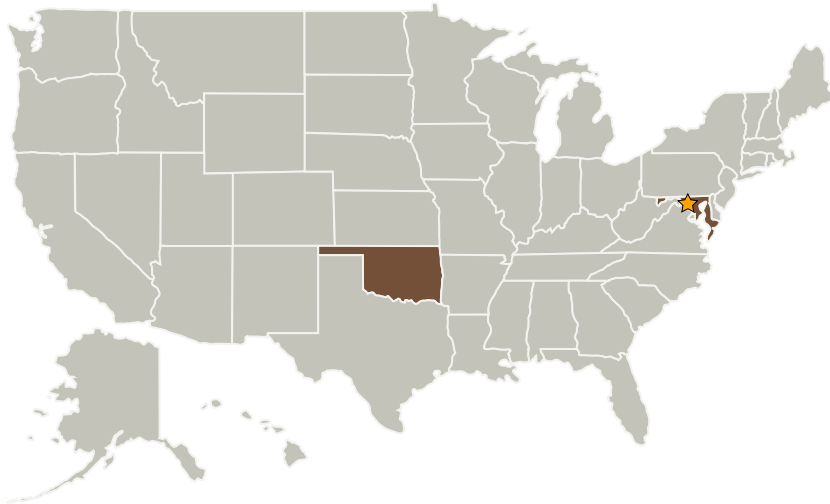
Project Introduction	1
Anticipated Benefits	1
Primary U.S. Work Locations and Key Partners	2
Project Website:	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3

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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Co-Funding Partners	Type	Location
NASA EPSCOR Students	NASA Other	
Space Technology Research Fellowships(NSTRF)	NASA Program	
University of Oklahoma-Norman Campus	Academia	Norman, Oklahoma

Primary U.S. Work Locations	
Maryland	Oklahoma

Project Website:

<http://sciences.gsfc.nasa.gov/csd/>

TechPort

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 For more information and an accessible alternative, please visit:
<https://techport.nasa.gov/view/11792>

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

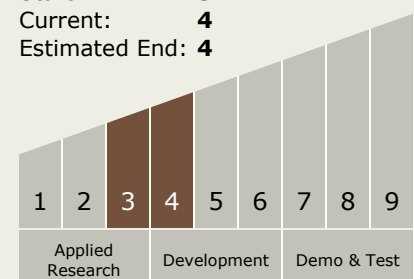
Project Manager:

Terence A Doiron

Principal Investigator:

Rafael F Rincon

Technology Maturity (TRL)

 Start: 3
 Current: 4
 Estimated End: 4


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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves